

Strategic Asset Allocation Judges' Retirement System II (JRS II) and Legislators' Retirement System (LRS)

Geraldine Jimenez & Raymond Venner

April 11, 2011

Agenda

- Asset Allocation Considerations for JRS II and LRS
- Plan Characteristics and Effect on Asset Allocation
- JRS II:
 - Objectives and Program Characteristics
 - Recommended policy portfolio (P7)
- LRS:
 - Objectives and Program Characteristics
 - Recommended policy portfolio (P2)
- Next Steps
- Capital Market Assumptions (Appendix)

Plan Characteristics and Effect on Asset Allocation

Plan Characteristic	Implication for Portfolio	Notes
Funded Status (High)	Decrease Risk	If better-funded, more able to defease liabilities while incurring less risk
Funded Status (Low)	Increase Risk	To the extent to which downside risk remains acceptable for lower funded plans
Cash Outflows (Large)	Decrease Risk	Large benefit payments reduce the ability to recover from an investment loss
Cash Inflows (Large)	Increase Risk	Large contributions increase the ability to absorb an investment loss
Long Duration of Outflows	Increase Risk	A plan can better absorb an investment loss if benefit payments are more distant (members retire later)
Diversity of Contribution	Increase Risk	A plan can bear more risk if multiple ongoing stable funding sources

* The table is intended to be merely a tool in assisting the selection of the target risk of a plan

- not a complete list of characteristics
- not definitive relations between characteristics and the willingness or ability to bear investment risk

JRS II Objectives and Program Characteristics

Judges' Retirement System II (JRS II) provides retirement and death benefits for Supreme and Appellate Court Justices, and Superior Court Judges, first appointed or elected on or after November 9, 1994

Contribution rates set by the CalPERS Board

Employee rate (6/30/10) = 8.0%; no change in FY 10/11

Employer rate (6/30/10) = 20.4%; raised in FY 10/11 to 24.0%

Funded Ratio as of 6/30/10 = 77%

JRS II program characteristics suggest a moderate to aggressive asset allocation

More than 98% of JRS II members (1,197 of 1,216) are active (6/30/10) \Rightarrow aggressive

Cash flow substantially positive \Rightarrow aggressive

Plan has a lower funded ratio \Rightarrow aggressive (if downside risk acceptable)

Cost of living adjustments (up to 3%) \Rightarrow inflation protection

JRS II Asset Classes

JRS II Current	JRS II Proposed
--	TIPS
U.S. Fixed Income	U.S. Fixed Income
U.S. Equity	Global Equity
Int'l Equity	
Global REITs	Global REITs
--	Commodities

2011 Enhancements

- Consolidate U.S. and int'l equity into "Global Equity" with emerging markets and small- to mid-cap stocks
- Add Commodities & Treasury Inflation Protected Securities (TIPS) to enhance diversification and hedge against rising inflation
- Offer five broad asset classes for diversification

JRS II Alternative Policy Portfolios

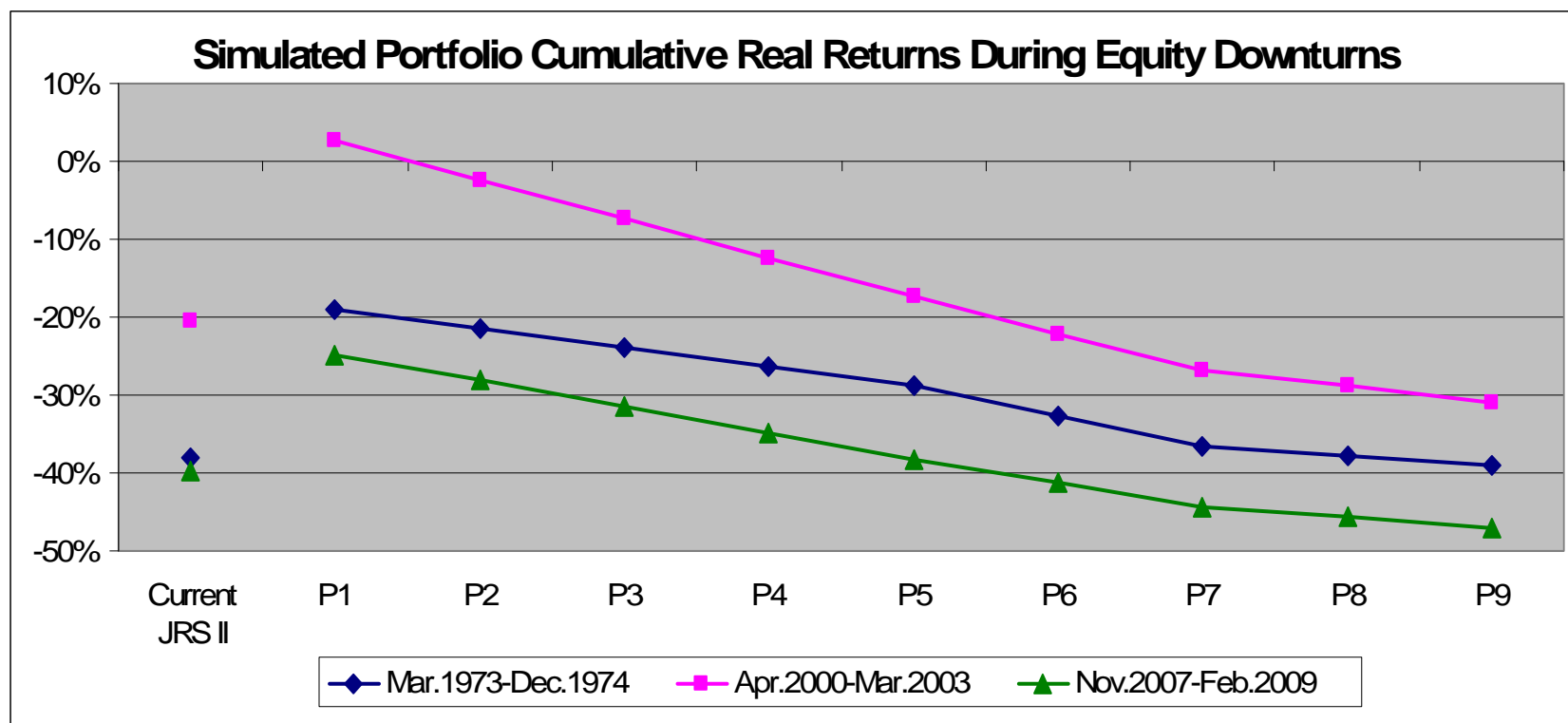
Nine alternative policy portfolios were selected from conservative (P1) to aggressive (P9)

	Current									
	JRS II	P1	P2	P3	P4	P5	P6	P7	P8	P9
Expected Annual Nominal Return										
Compound	6.67%	5.50%	5.75%	6.00%	6.25%	6.50%	6.75%	7.00%	7.10%	7.20%
Volatility	10.28%	6.74%	7.27%	7.90%	8.63%	9.46%	10.35%	11.31%	11.73%	12.18%
Average	7.17%	5.71%	6.00%	6.29%	6.60%	6.92%	7.25%	7.59%	7.74%	7.89%
Sharpe Ratio	0.406	0.445	0.447	0.443	0.434	0.423	0.411	0.398	0.392	0.386
Prob. of annual loss	24.3%	19.8%	20.5%	21.3%	22.2%	23.2%	24.2%	25.1%	25.5%	25.8%
Prob. of annual loss > 10%	4.7%	1.0%	1.4%	2.0%	2.7%	3.7%	4.8%	6.0%	6.5%	7.1%
Est. Contribution Rate	27.3%	36.0%	33.7%	33.7%	31.5%	29.4%	27.3%	25.4%	25.4%	23.4%
Allocation										
US I.L. Bonds (TIPS)	0%	15%	15%	15%	15%	15%	11%	6%	5%	5%
U.S. Nominal Bonds	36%	48%	42%	36%	30%	24%	22%	20%	18%	15%
Global Equity	54%	26%	32%	38%	44%	50%	56%	63%	66%	69%
Global Public Real Estate	10%	8%	8%	8%	8%	8%	8%	8%	8%	8%
Commodities	0%	3%	3%	3%	3%	3%	3%	3%	3%	3%

The recommended JRS II policy portfolio is P7

- P7 is a moderately aggressive portfolio with 71% equity including REITs
- PERF target portfolio return is 7.38% and volatility is 11.92%
- P7 appears reasonable given the characteristics of the Plan and is reasonably consistent with the Board's decision on PERF

Simulated Portfolio Cumulative Real Returns During Equity Downturns



The recommended JRS II portfolio is P7

Simulated Portfolio Returns - Observations

- Since 1970, there have been three periods with cumulative equity market losses exceeding 45%.
- Simulated returns during these stress periods are shown for the current JRS II and policy portfolios P1 to P9.
- Maximum loss for the recommended portfolio (P7) would have ranged from 27% to 44%.
- Return differences across portfolios were greater during the 2000-03 downturn, when returns of non-equities (REITs, TIPS, nominal bonds, commodities) were all positive, providing effective diversification.

LRS Objectives and Program Characteristics

Legislators' Retirement System (LRS) provides defined and death benefits to legislators serving prior to 11/7/1990 and current elected constitutional and legislative statutory officers

Contribution rates set by the CalPERS Board

Employer – no contributions since July 1998

Employee – no contributions since 2000

Funded Ratio as of 6/30/10 = 107%

LRS program characteristics suggest a conservative asset allocation

Approximately 88% of LRS members (255 of 291) are retired (6/30/10) \Rightarrow conservative

Cash flow substantially negative \Rightarrow conservative

Plan approximately fully funded \Rightarrow moderate

Cost of living adjustments (unlimited) \Rightarrow inflation protection

LRS Asset Classes

LRS Current	LRS Proposed
TIPS	TIPS
U.S. Fixed Income	U.S. Fixed Income
U.S. Equity	Global Equity
Int'l Equity	
--	Global REITs
--	Commodities

2011 Enhancements

- Consolidate U.S. and int'l equity into "Global Equity" with emerging markets and small- to mid-cap stocks
- Add Global Real Estate Investment Trusts (REITs) and Commodities to enhance diversification and growth potential
- Offer five broad asset classes for diversification

LRS Alternative Policy Portfolios

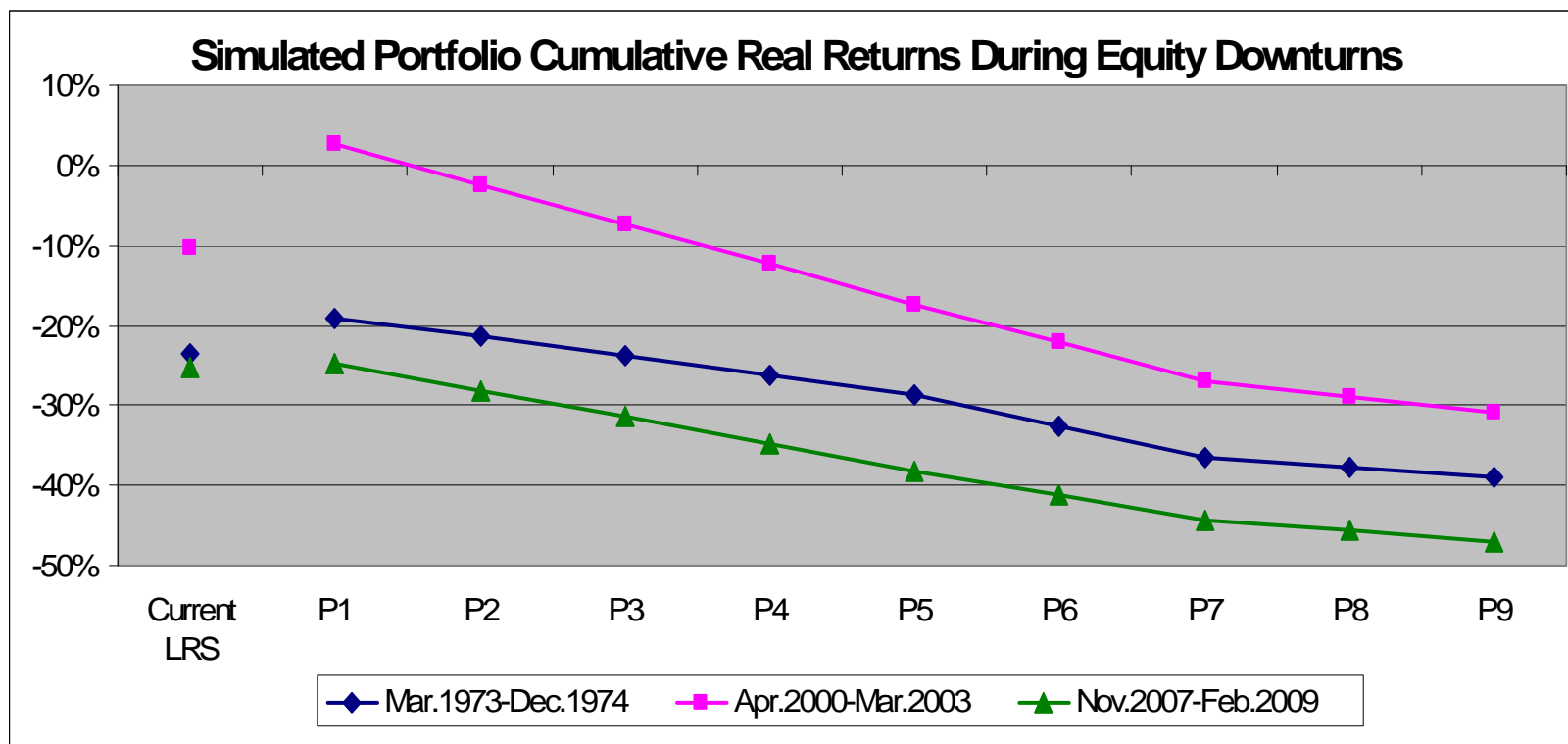
Nine alternative policy portfolios were selected from conservative (P1) to aggressive (P9)

	Current									
	LRS	P1	P2	P3	P4	P5	P6	P7	P8	P9
Expected Annual Nominal Return										
Compound	5.64%	5.50%	5.75%	6.00%	6.25%	6.50%	6.75%	7.00%	7.10%	7.20%
Volatility	7.63%	6.74%	7.27%	7.90%	8.63%	9.46%	10.35%	11.31%	11.73%	12.18%
Average	5.91%	5.71%	6.00%	6.29%	6.60%	6.92%	7.25%	7.59%	7.74%	7.89%
Sharpe Ratio	0.411	0.445	0.447	0.443	0.434	0.423	0.411	0.398	0.392	0.386
Prob. of annual loss	21.9%	19.8%	20.5%	21.3%	22.2%	23.2%	24.2%	25.1%	25.5%	25.8%
Prob. of annual loss > 10%	1.8%	1.0%	1.4%	2.0%	2.7%	3.7%	4.8%	6.0%	6.5%	7.1%
Est. Contribution Rate	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Allocation										
US I.L. Bonds (TIPS)	10%	15%	15%	15%	15%	15%	11%	6%	5%	5%
U.S. Nominal Bonds	50%	48%	42%	36%	30%	24%	22%	20%	18%	15%
Global Equity	40%	26%	32%	38%	44%	50%	56%	63%	66%	69%
Global Public Real Estate	0%	8%	8%	8%	8%	8%	8%	8%	8%	8%
Commodities	0%	3%	3%	3%	3%	3%	3%	3%	3%	3%

The recommended portfolio is P2

- P2 is a relatively conservative portfolio with 40% equity including REITs
- The volatility is similar to the current LRS portfolio
- P2 has an improved forecast Sharpe ratio (ratio of cash-adjusted return to volatility)

Simulated Portfolio Cumulative Real Returns During Equity Downturns



The recommended LRS portfolio is P2

Simulated Portfolio Returns - Observations

- Since 1970, there have been three periods with cumulative equity market losses exceeding 45%.
- Simulated returns during these stress periods are shown for the current LRS and policy portfolios P1 to P9.
- Maximum losses for the recommended portfolio (P2) would have ranged from 2% to 28%.
- P2 would have outperformed the current LRS policy portfolio during the 1973-74 and 2000-03 equity bear markets, but not during 2007-09, because REITs and commodities:
 - are included in P2 but not the current LRS portfolio
 - were effective equity hedges in the first two equity market downturns but not during the most recent one

Next Steps

- Investment staff will revise the current investment policy and submit to the IC Policy Subcommittee on June 13, 2011. If approved, the item will go to the Investment Committee on August 15, 2011 for final approval.
- Actuarial staff will recommend to the BPAC in May 2011 a discount rate for JRS II and LRS once the asset allocation has been decided.
- Investment staff will develop underlying investment fund implementation plan

Capital Market Assumptions

Forecast Asset Returns

	Compound Return	Volatility of Return	Arithmetic Return
U.S. Inflation Linked Bonds	3.50%	6.0%	3.67%
U.S. Nominal Bonds	3.75%	6.5%	3.95%
Global Equity	7.75%	16.0%	8.93%
Global Public Real Estate	7.75%	18.0%	9.24%
Commodities	5.00%	21.0%	7.08%

Forecast Sources

- Inflation-linked bonds (TIPS), nominal bonds, global equity, and commodities equates to Retirement Plan 2010 ALM Study, Nov. 2010
- Global REITs are assumed to have the same return as other equities but higher volatility consistent with long-term historical returns

Asset Class Caps and Floors

	Min	Max
U.S. Inflation Linked Bonds	5%	15%
U.S. Nominal Bonds	15%	100%
Global Equity	0%	80%
Global Public Real Estate	0%	8%
Commodities	0%	3%

Assumptions

- Maximum and minimum target allocations represent considerations not fully captured in the optimization
- Upper limits are set for assets that are potentially illiquid and that have a relatively small investable universe
- TIPS have a minimum because it is the asset most similar to the retirement liabilities, especially for plans with cost of living adjustments
- Minimum target weight on U.S. investment grade bonds ensures that at least 20% of every policy portfolio diversifies risks of growth assets

Forecast Correlations

	U.S. Inflation Linked Bonds	U.S. Nominal Bonds	Global Equity	Global Public Real Estate
U.S. Inflation Linked Bonds				
U.S. Nominal Bonds	0.55			
Global Equity	0.00	0.10		
Global Public Real Estate	0.17	0.14	0.55	
Commodities	0.20	0.00	0.10	0.26

Correlation measures the co-movement of asset returns. A lower correlation indicates better diversification.

Source of forecast correlations

- Inflation linked bonds, nominal bonds, global equity, and commodities = Retirement Plan 2010 Asset Liability Workshop
- Global public real estate = Wilshire Jan. 2010 for consistency with other correlations (little change between 2010 and 2011)

Correlation vs. global equity is highest for public real estate.